Clean Energy for Alaska's Coasts

Chris Rose
Executive Director
Renewable Energy Alaska Project (REAP)

Alaska Coastal Zone Management Program Conference
Anchorage, Alaska
May 5, 2011

Renewable Energy Alaska Project (REAP) is:

- Since 2004, Alaska's first *education and advocacy* group for renewable energy and energy efficiency.
- An Alaskan coalition of small and large electric utilities and utility interests, environmental groups, consumer groups, businesses, Alaska Native organizations and energy agencies with the goal of "increasing the production of renewable energy in Alaska."

REAP Board of Directors

Chugach Electric Association (CEA)
Municipal Light and Power (ML & P)
Golden Valley Electric Association (GVEA)
Homer Electric Association (HEA)
Kotzebue Electric Association (KEA)
Alaska Village Electric Cooperative (AVEC)
TDX Power
Alaska Power Association (APA)
Alaska Power and Telephone

Sierra Club
Alaska Center for the Environment
Alaska Conservation Alliance

Alaska Public Interest Research Group (AkPIRG)
Rural Alaska Community Action Program (RurALCAP)
Green Star

Chena Hot Springs Resort
Ocean Renewable Power Company (ORCP)
ABS Alaskan

Bering Straits Native Corporation
Yukon River Inter-Tribal Watershed Conference
Cook Inlet Region Incorporated (CIRI)

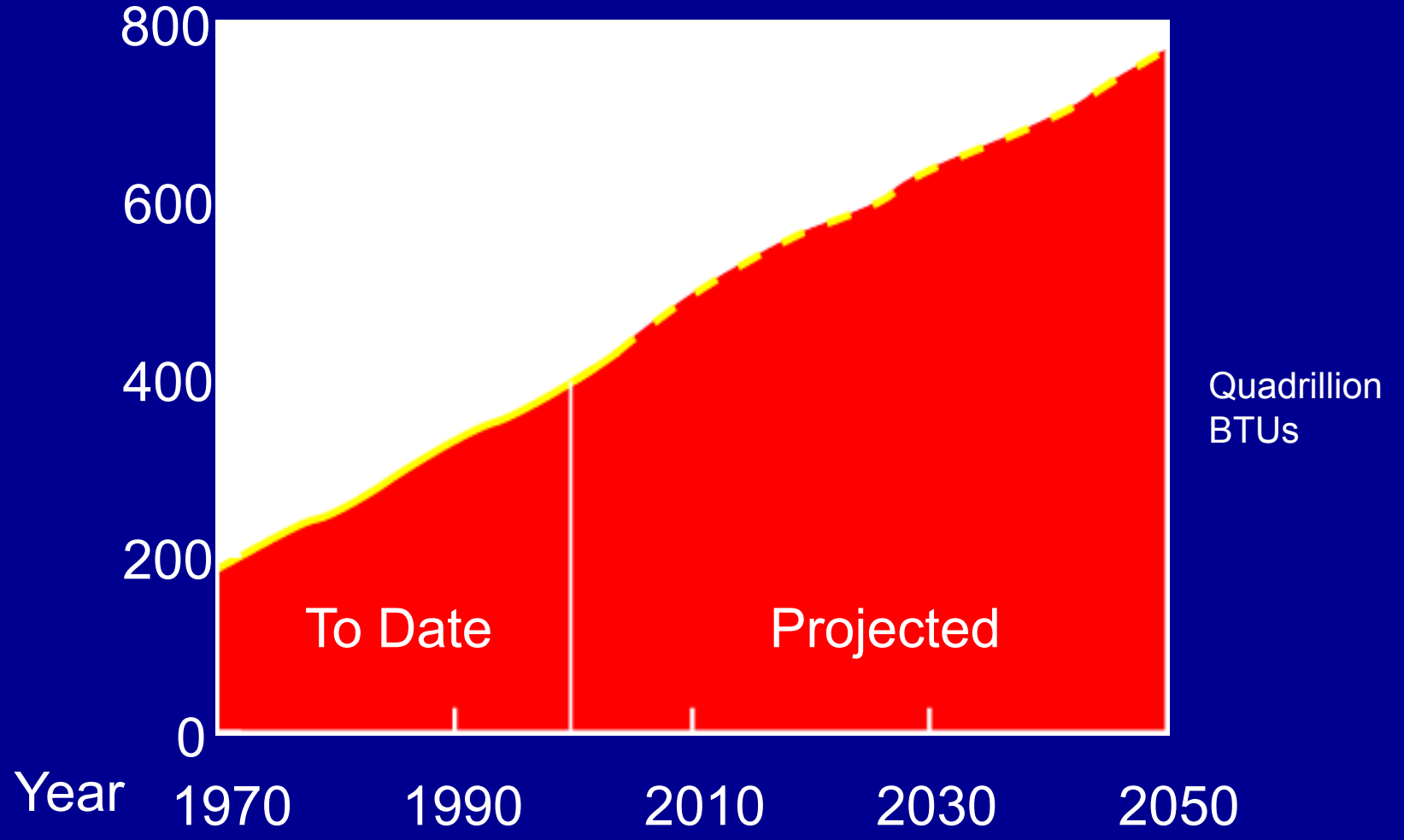
REAP Contributing Members

Alaska Energy Authority (AEA)
Denali Commission
National Renewable Energy Lab (NREL)
Alaska Housing Finance Corporation (AHFC)
Alaska Center for Energy & Power (ACEP)
USDA Rural Development
Alaska Municipal League (AML)

Energy is What Sets Humans Apart

Renewable Energy is Risk Management:

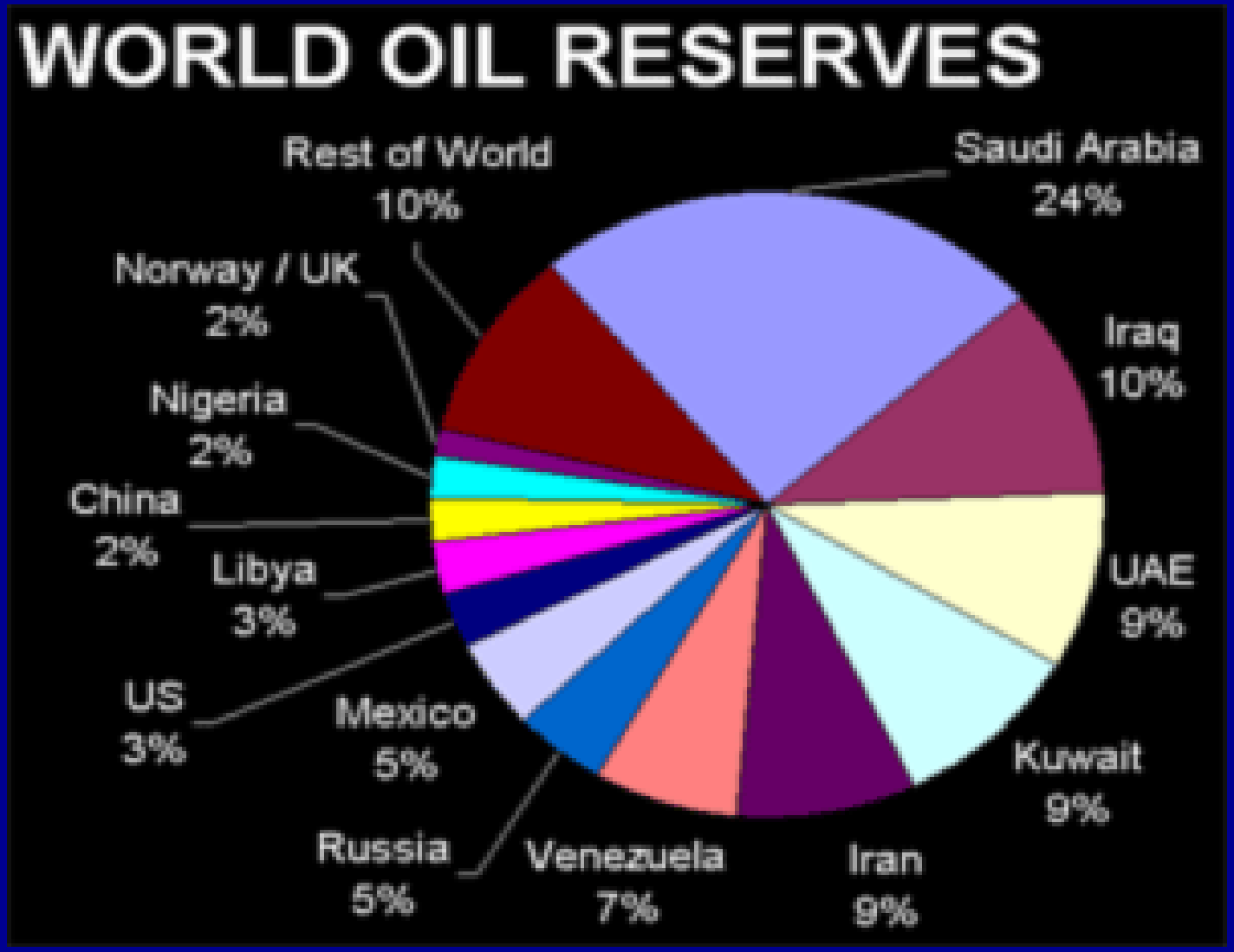
Worldwide Energy Use Expected to Double by 2050




EPSON
wynn
TDK
KYOCERA
ABBOTT
Nikon
LG电子

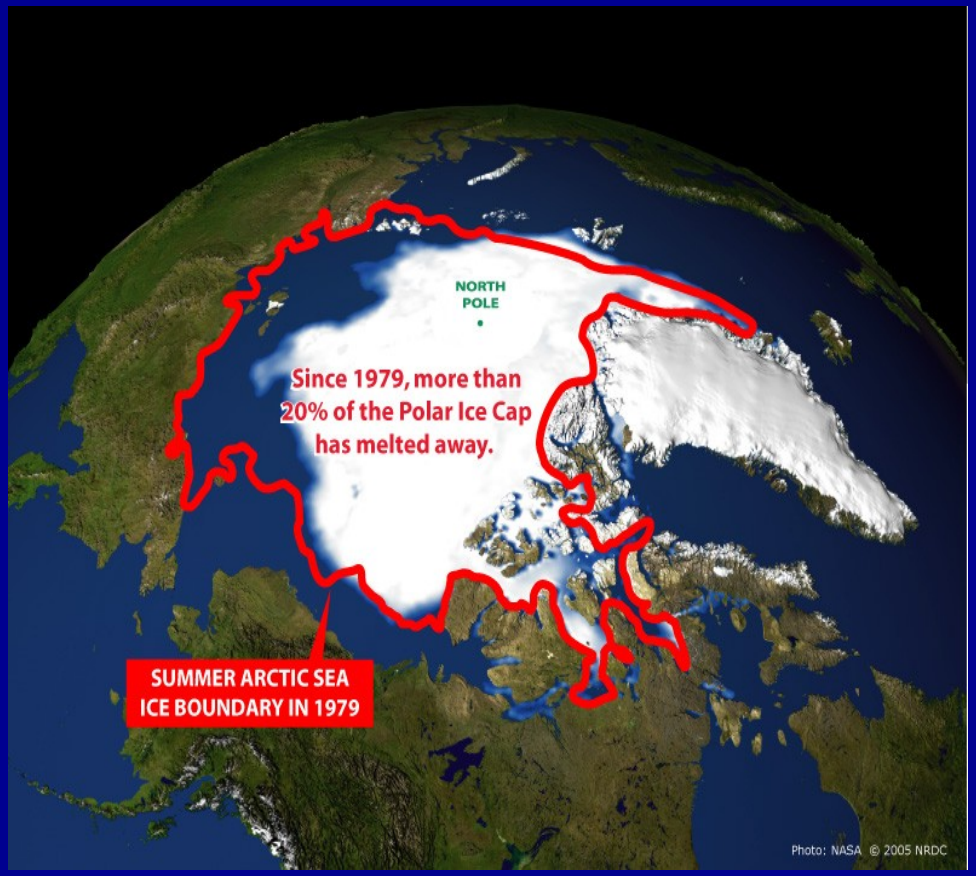
Renewable Energy is Risk Management

Two Thirds of the World's Proven Conventional Oil Reserves are in the Persian Gulf




EAGLE ATLANTA

Renewable Energy is Risk Management:
The World's Climate is Changing



"For Swiss Re, climate change is more than a scientific issue. It is a financial issue."

Chris Walker, Managing Director, Greenhouse Gas Risk Solutions Unit for Swiss Re, the world's second largest re-insurer

Renewable Energy is Risk Management:

The $155 billion/yr Clean Energy Market is Growing Quickly

Sharp

Enercon

Vestas

British Petroleum

Gamesa

Toyota

Suntech

In the next 20 years it's estimated rural Alaska will spend $5 BILLION on diesel fuel alone if we continue business as usual

During the same period the Railbelt would spend $60 BILLION on fossil fuels for transportation,

electricity and heat

What about the next 40 years?

Efficiency and Conservation

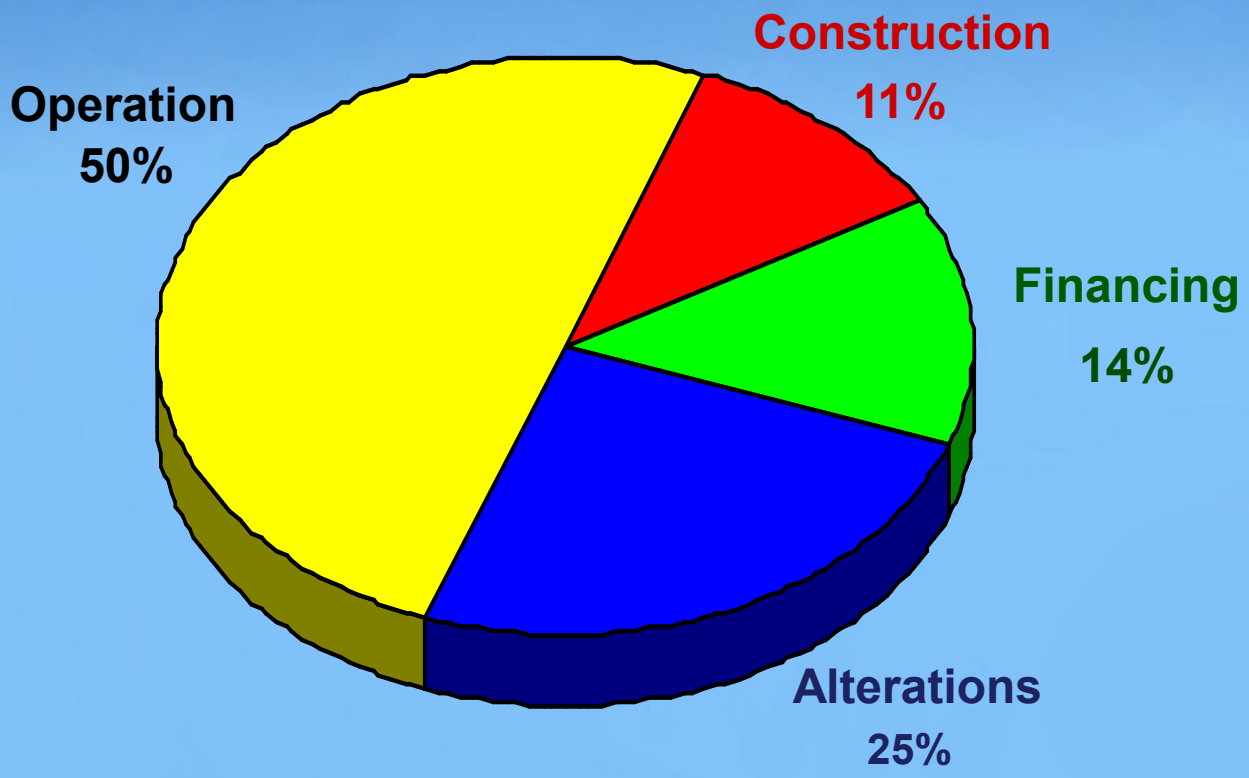
Doing More with Less

- ***Energy efficiency*** reduces the amount of energy consumed while still delivering the same quality of energy.
- ***Energy conservation*** requires conscious decisions and behavior changes that result in reductions in energy consumption.

State Energy Efficiency Study & Recommendations

- State Leadership
- Funding Energy Efficiency
- Public Education and Outreach
- Baseline Data
- Existing Residential Buildings
- New Residential Construction
- Existing Commercial Buildings
- New Commercial Construction
- Public Buildings.

Building Cost over 40 Years: Real World Costs*



*ASHRAE - American Society for Heating, Refrigeration & Air Conditioning Engineers

Energy Efficiency is Always Cheaper than Generation

- ACEEE - the average cost of delivering energy efficiency programs in the U.S.
  - In 2004, $0.03 per kWh
  - **In 2009, $0.025 per kWh**

- Compared to energy supply-side resources
  - Coal $0.07 to $0.14 per kWh
  - Natural Gas $0.07 to $0.10 per kWh
  - Wind $0.04 to $0.12 per kWh

AHFC Weatherization and Rebate Program Summary

- 17,320 homes completed
- Reduced energy use 32%
- Reduce energy costs 30%
- Created a 2,500 - 4,000 jobs
- All funds ($360 million) obligated

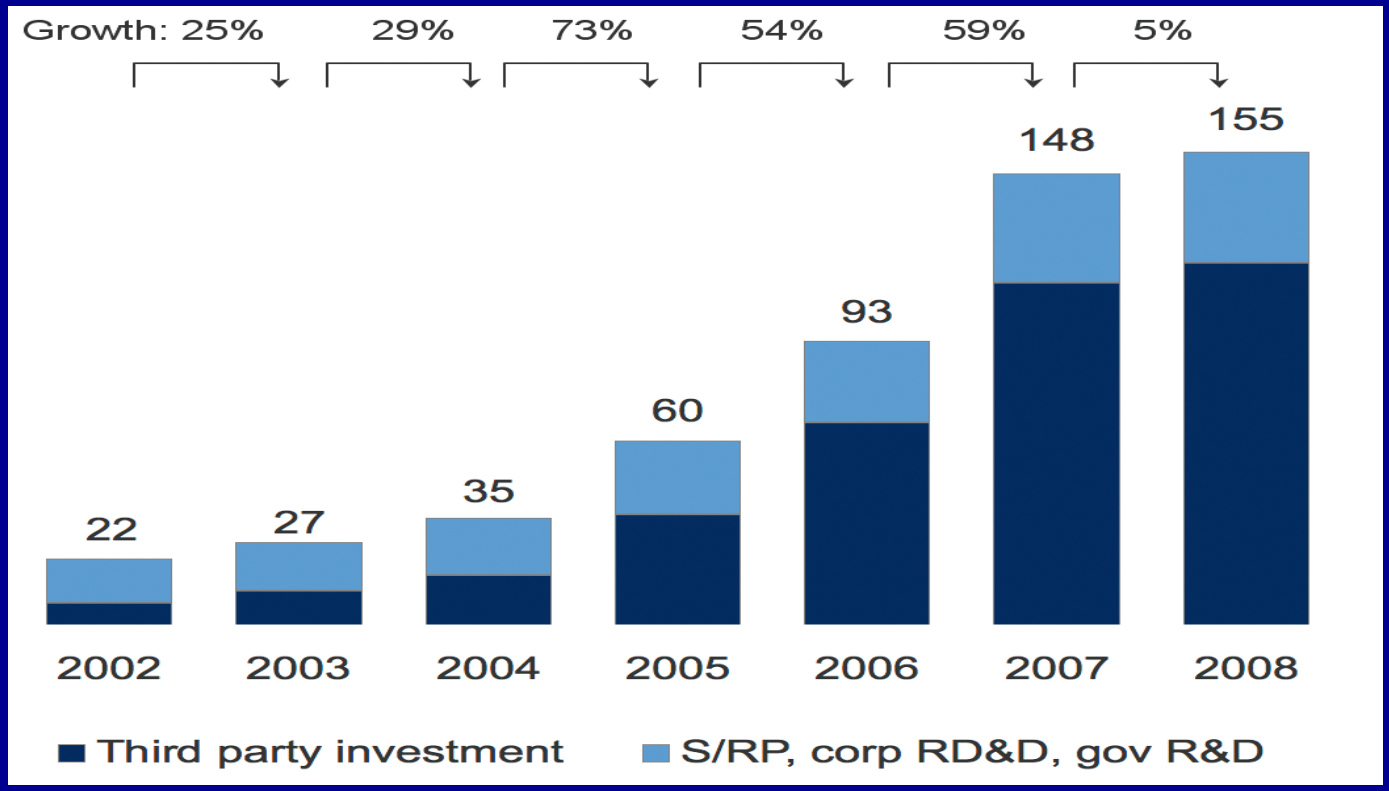
Alaska's Renewable Energy Resources

- Wind
- Geothermal
- Biomass
- Tidal/Wave
- Hydro
- Solar

Advantages of Renewable Energy

- Stably Priced (no fuel costs)
- Clean
- Local
- Inexhaustible

New Investment in Clean Energy, 2002-2008, in billions



Source: New Energy Finance

Ocean Energy – Tidal and Wave Power

Alaska has over 90% of the nation's tidal power potential, and more than 75% of the nation's wave energy potential

Limited to a few demonstration projects so far

Experts expect commercialization of technologies in the next 5-7 years


Calm Point
Knik Arm
Fire Island
Palmer
Upper Cook Inlet
Wasilla
Pt Possession
Anchorage
Valdez
North Foreland
Creek
The Forelands
Kenai / Soldotna
East of Kalgin Island
Harriet Point
Cape Ninilchik
Bainbridge Passage
Homer
Dillingham
Chugach Passage
Clarks Point
Cape Current Narrows
Whale Passage
Kodiak
GULF OF ALASKA
North Inian Pass
North Passage (Icy Strait)
Juneau
South Passage (Icy Strait)
South Inian Pass
Kootzhanoo Inlet
Sergius Narrows
Turn Point
Sitka
South Ledge
Spike Rock
Tonowek Narrows
Ketchikan
Tlevak Narrows
Ocean
Tidal Electric Generation Potential
MW
1.3 - 25
25 - 50
50 - 75
75 - 100
100 - 220
Wave Power Potential
kW/m
26 - 30
30 - 40
40 - 50
50 - 56

Tidal Energy in Cook Inlet

"As HEA looks for ways to lessen its dependence on natural gas, exploring renewable energy options is a priority for us. In addition to the obvious renewable energy potential, this project will also bring substantial economic benefits to the Kenai Peninsula."

Brad Janorschke
General Manager
Homer Electric Association

Electric Transportation

Key Levers

- *Policy*
- *Technology*
- *Financing*

Constraints

- *Political capital*
- *Economic capital*
- *Human capital*
- *Time*

Also Need….

Education

Understand benefits, dispel myths and create a vision

Standardization

National policy creates certainty

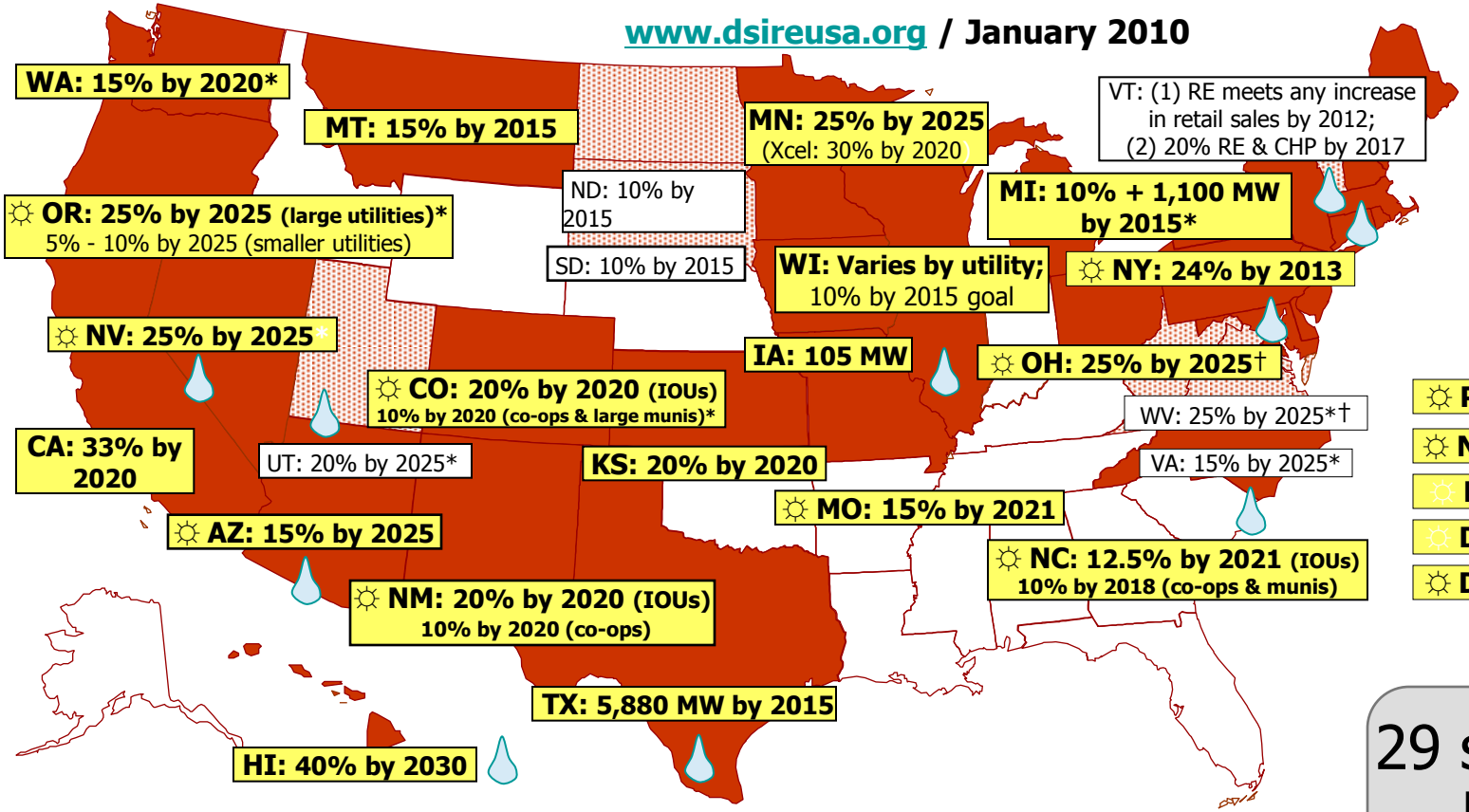
Market Aggregation

Create economies of scale

Community Buy-In

Renewable Portfolio Standards

www.dsireusa.org / January 2010



29 states & DC
have an RPS
6 states have goals

State renewable portfolio standard

State renewable portfolio goal

Solar water heating eligible

Minimum solar or customer-sited requirement

* Extra credit for solar or customer-sited renewables

† Includes non-renewable alternative resources

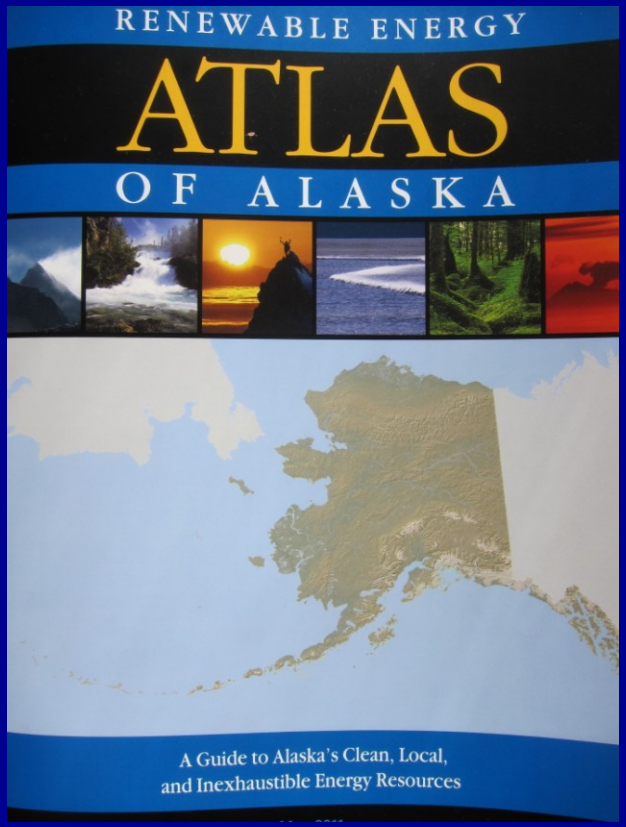
2010 Legislative Session

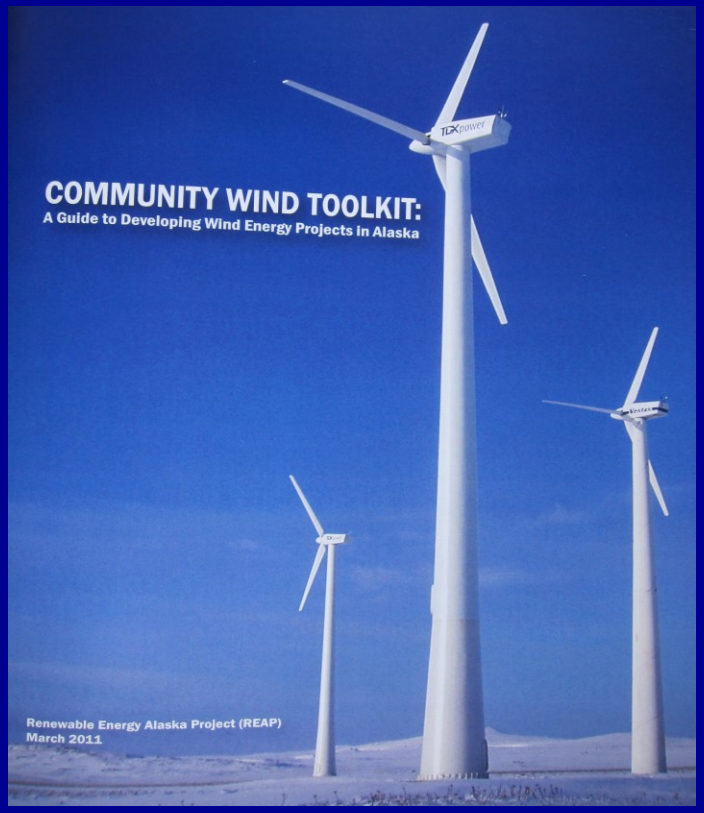
- 50% renewable electricity by 2025 *goal*
- 15% energy use reduction by 2020 *goal*
- 25% public building retrofit by 2020 *mandate* with $250 million revolving loan fund
- Emerging Energy Technology Fund created

Renewable Energy Grant Fund

- HB 152 passed in 2008
- Commitment of $50 million/year for 5 years
- So far through three rounds, 133 projects have been funded with $150 million
- $36.5 million pending for Round IV now
- Round V applications due this summer
- Need linkage with the Emerging Energy Technology Fund established in 2010

Resources


RENEWABLE ENERGY
ATLAS
OF ALASKA
A Guide to Alaska's Clean, Local,
and Inexhaustible Energy Resources


COMMUNITY WIND TOOLKIT:
A Guide to Developing Wind Energy Projects in Alaska
Renewable Energy Alaska Project (REAP)
March 2011

What RE and EE Can Do For Alaska

- *Reduce* fossil fuel use and imports
- *Stabilize* energy prices
- *Attract* investment
- *Diversify* our economy and create jobs
- *Help* us remain an “energy state”

Iceland's Vision